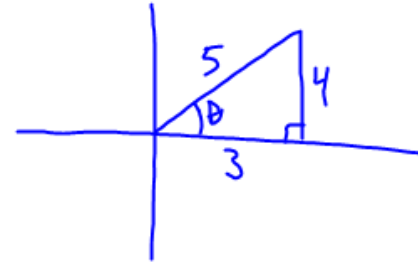


① Find  $\cos \theta$  if  $\sec \theta = \frac{5}{3}$  Find other 4 trig functions

$$\begin{aligned} \rightarrow \cos \theta &= \frac{3}{5} & \sec \theta &= \frac{5}{3} \\ \sin \theta &= \frac{4}{5} & \csc \theta &= \frac{5}{4} \\ \tan \theta &= \frac{4}{3} & \cot \theta &= \frac{3}{4} \end{aligned}$$



② Find  $\sin \theta$  if  $\csc \theta = -\frac{\sqrt{12}}{2}$  find other 4 trig functions  
Quad IV

$$\sin \theta = -\frac{2}{\sqrt{12}} \cdot \frac{\sqrt{12}}{\sqrt{12}} = -\frac{2\sqrt{12}}{12} = -\frac{\sqrt{12}}{6} = -\frac{2\sqrt{3}}{6} = -\frac{\sqrt{3}}{3}$$

which positive



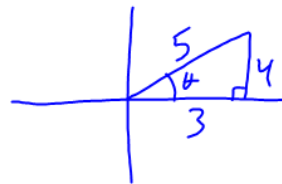
$$(-2)^2 + x^2 = \sqrt{12}^2$$

$$\begin{aligned} 4 + x^2 &= 12 \\ x^2 &= 8 \end{aligned}$$

$$\begin{aligned} \cos \theta &= \frac{\sqrt{8}}{\sqrt{12}} = \frac{\sqrt{2}}{2\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{6}}{3} \\ \tan \theta &= -\frac{2}{\sqrt{8}} = -\frac{2}{2\sqrt{2}} = -\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = -\frac{\sqrt{2}}{2} \\ \sec \theta &= \frac{\sqrt{12}}{\sqrt{8}} = \frac{2\sqrt{3}}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{6}}{2} \\ \cot \theta &= \frac{\sqrt{8}}{-2} = \frac{2\sqrt{2}}{-2} = -\sqrt{2} \end{aligned}$$

① Find  $\cos \theta$  if  $\sec \theta = \frac{5}{3}$

$$\cos \theta = \frac{3}{5}$$



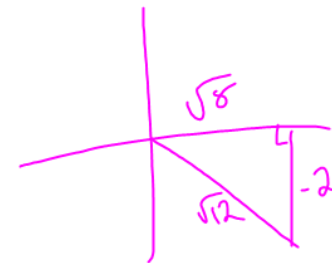
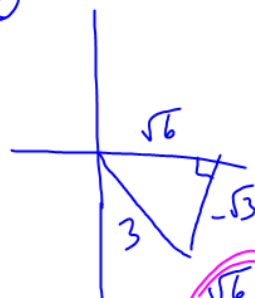
② Find  $\sin \theta$  if  $\csc \theta = -\frac{\sqrt{12}}{2}$

$$\sin \theta = -\frac{2}{\sqrt{12}} = -\frac{2}{2\sqrt{3}} = -\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \left(-\frac{\sqrt{3}}{3}\right)$$

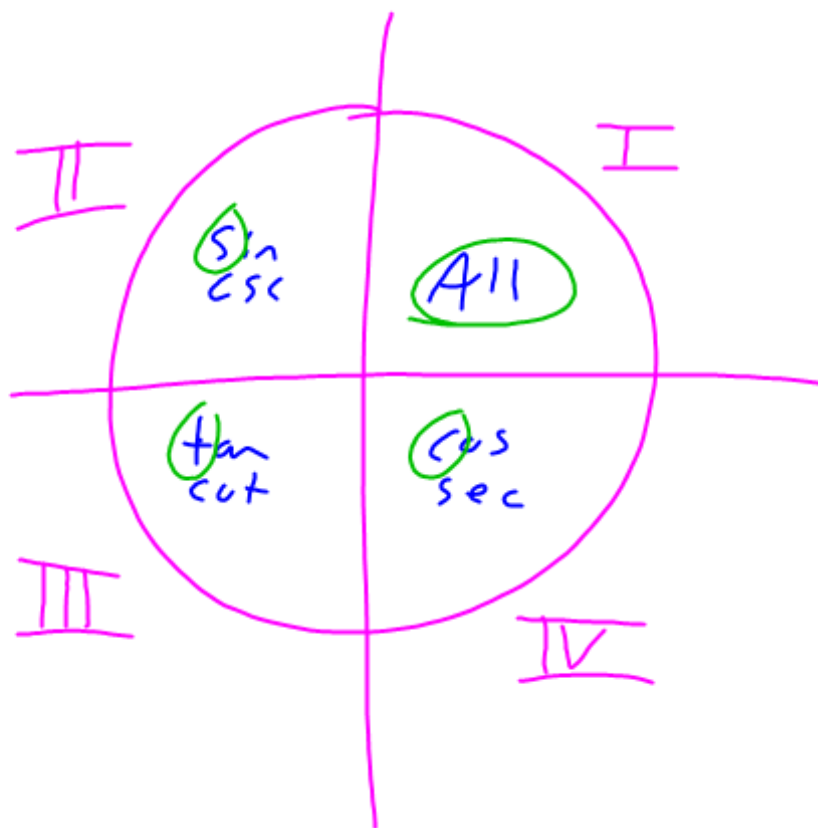
③ Find the other 4 Trig. Functions of #1 & 2

①

$$\begin{aligned}\sin \theta &= \frac{4}{5} \\ \csc \theta &= \frac{5}{4} \\ \tan \theta &= \frac{4}{3} \\ \cot \theta &= \frac{3}{4}\end{aligned}$$



$$\begin{aligned}\cos \theta &= \frac{\sqrt{6}}{3} \\ \sec \theta &= \frac{3}{\sqrt{6}} = \frac{3\sqrt{6}}{6} = \frac{\sqrt{6}}{2} \\ \tan \theta &= \frac{-\sqrt{3}}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = -\frac{\sqrt{18}}{6} = -\frac{3\sqrt{2}}{6} = -\frac{\sqrt{2}}{2} \\ \cot \theta &= \frac{\sqrt{6}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = -\frac{\sqrt{18}}{3} = -\frac{3\sqrt{2}}{3} = -\sqrt{2} \\ \csc \theta &= \frac{\sqrt{12}}{-2} = \frac{2\sqrt{3}}{-2} = -\sqrt{3}\end{aligned}$$



Which trig. functions are positive?

# Range

for trig funct.

$$-1 \leq \sin \theta \leq 1$$

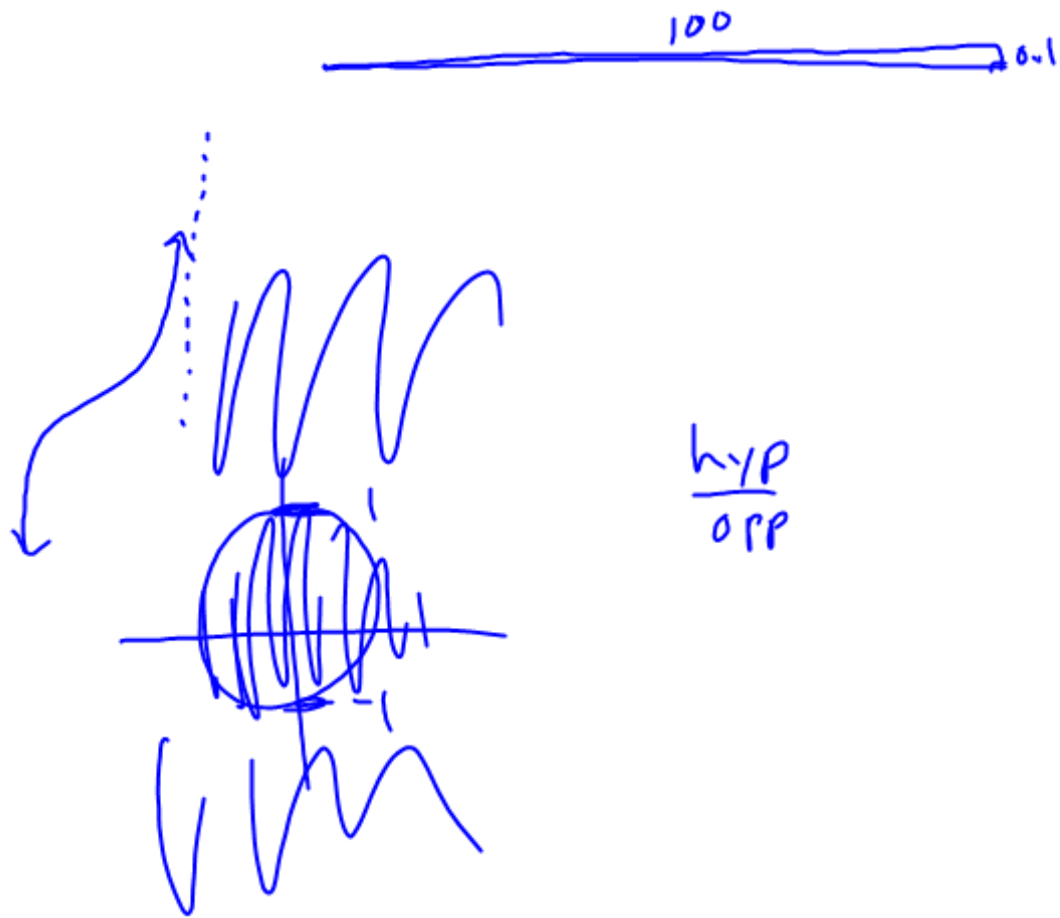
$$-1 \leq \cos \theta \leq 1$$

$$-\infty < \tan \theta < \infty$$

$$-\infty < \cot \theta < \infty$$

$$\csc \theta \leq -1 \text{ and } 1 \leq \csc \theta$$

$$\sec \theta \leq -1 \text{ and } 1 \leq \sec \theta$$



$$\sin \theta = \sqrt{8} \quad F$$

$$\tan \theta = 110.47 \quad T$$

$$\csc \theta = \frac{2}{6} \quad F$$

Sect. 1.4

#1, 5, 6, 7, 12, 13, 21, 24, 28-32, 55, 56, 64-70